**Genetics Unit Review Questions**

**DNA & Protein Synthesis**

The complementary base to cytosine.

The shape of a DNA molecule.

The sides of a DNA molecule are made of phosphate & \_\_\_.

Who won a Nobel prize for discovering the structure of DNA?

The process by which DNA makes an exact copy of itself.

When does replication occur?

Where does replication occur?

Which of the following is not a nitrogen base in a DNA molecule: adenine, guanine, uracil, or cytosine?

The process of making mRNA from DNA is called \_\_.

The process of making a protein from mRNA is called \_\_\_.

In what part of the cell does translation take place?

A codon codes for a specific \_\_.

The molecule involved with protein synthesis that is made of 3 bases, is found in the cytoplasm, & delivers amino acids to the ribosome.

True or False:

mRNA contains anticodons.

DNA travels throughout the cell.

In DNA, nitrogen bases are attached to the sugar molecules.

Amino acids are the building blocks of protein.

In DNA, what is the complementary strand to C-G-A?

In RNA, what is the complementary strand to A-T-C?

Name the 2 molecules involved with transcription.

**Meiosis**

The process of cell division that results in the formation of gametes.

How many sperm are produced during meiosis?

The exchange of genetic material between homologous chromosomes during meiosis.

Give an example of a gamete.

True or False:

-Meiosis produces diploid cells.

-Meiosis produces identical gametes.

-Normal members of a population always have an even number of

chromosomes.

-Homologous chromosomes are members of the same pair.

If a sperm cell for a particular species has 8 chromosomes, how many chromosomes does the egg of that species have?

If a sperm cell for a particular species has 28 chromosomes, how many chromosomes would an eye cell of that species have?

Name one benefit of meiosis.

A single, diploid cell that results from fertilization.

**Mutations**

A change in the DNA sequence

An example of a mutagen

True or False:

-Some mutations have no effect whatsoever.

-Only mutations that occur on the sex cells can be passed to offspring.

-A frameshift mutation only affects one amino acid whereas a point

mutation can affect several amino acids.

-Cancer may arise as a result of a gene mutation.

A mistake during meiosis - results in gametes with too few or too many chromosomes

**Mendelian Genetics**

A member of a gene pair that determines a specific trait.

The Father of Genetics.

When genes for a trait are different, such as Bb.

The actual gene makeup of an organism.

A condition in which neither allele in a gene pair masks the other and a third, in-between phenotype results.

X shaped structures made of DNA; found in the nucleus of the cell.

Female chromosomes are \_\_ \_\_\_; male chromosomes are \_\_\_,\_\_\_.

A gene that is always expressed when present; represented by capital letters.

The physical appearance of an organism.

Mendel experimented with \_\_\_\_\_\_\_\_\_\_to learn about genetics.

When a gene pair consists of two dominant alleles or two recessive alleles, it is said to be \_\_\_ for that trait.

According to the Law of \_\_\_\_\_\_\_\_\_\_\_\_, gene pairs are separated during the formation of gametes.

A segment of DNA that codes for a specific protein or trait.

A chart used to show the possible gene combinations in a cross between two organisms.

An allele that seems to disappear in the presence of a different allele for the same trait is said to be \_\_\_.

Organisms inherit genes in pairs, one from each \_\_\_\_\_\_\_\_.

The Law of \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ states that each gene pair is inherited independently of the gene pairs for other traits.

When more than one pair of genes controls a trait.

Bonus: List the 6 steps for solving a genetic problem

What do we now know about genetics that makes some of the ideas of

Mendelian inheritance invalid?